

Smooth Brome (*Bromus inermis*) – The Silent Invader of Native Areas
Jody K. Nelson*, USDOE – Rocky Flats Site, Westminster, CO

Smooth brome (*Bromus inermis*) is an exotic graminoid species that has been used for over a century across much of North America for range improvement and revegetation. While most “noxious” weeds invade quickly and are quite noticeable, a smooth brome invasion can imperceptibly transform the native grassland diversity to a near monoculture over many years or decades. At the Rocky Flats Site, a U.S. Department of Energy facility near Denver, Colorado, smooth brome is increasingly problematic, as it is along much of the Front Range. This study was conducted to determine the expansion rate of smooth brome circles, evaluate the effectiveness of different control methods to kill smooth brome circles, and evaluate the effectiveness of revegetating dead smooth brome circles with native plant species. From spring 2003 to fall 2005 (three growing seasons), the size of smooth brome circles in a native grassland increased by 208% (mean 4.3 m²) for small circles (< 4 m² initially) and 35% (mean 26 m²) for large circles (>30 m² initially). The mean increase for all size circles combined from this study was 40% (mean 15 m²). Assuming an average increase of 5 m² per year per smooth brome circle, one acre of native grassland diversity is lost annually for every 807 circles. Three control techniques were tested on smooth brome circles: shading, glyphosate applications (rate = 2.5 fl.oz/gal/300 ft² of 50.2% glyphosate solution; hand sprayer), and glyphosate plus shading. After three years (2004 to 2006), the effectiveness of the above treatments (as determined by no presence of smooth brome in the plot) was 60%, 20%, and 40%, respectively. The most effective treatment was shading which still had a 40% return of smooth brome. The least effective treatment was the glyphosate application which had an 80% return rate of smooth brome. Whether from the seed bank or residual root systems, smooth brome returned with all of the treatments. The control methods tested were not successful as one-time applications and so continued follow-up treatments are necessary to kill new smooth brome plants that establish in the previous circles. The revegetation of the old circles had mixed results. While seeded species have come up, the disturbance resulting from the control actions has resulted in post-treatment circles that are in an early successional state. Competition from various native and non-native early successional species combined with the 2006 drought, has limited establishment of seeded species. Continued proactive management of the circles to prevent smooth brome reestablishment as well as establishment of the desired seeded species will be necessary for long-term success.